

# Technology Opportunity

## Pressure Sensitive Paint

The National Aeronautics and Space Administration (NASA) seeks to transfer a technique for acquiring pressure measurements using pressure sensitive paint.

### Potential Commercial Uses

- Aerodynamic research and development
- Automobile and motorcycle development and testing
- Wind tunnel testing
- Fan and blower development
- Optical oxygen sensors

### Benefits

- Noncontact pressure measurements
- Global full view pressure mappings
- Same format for data output and computer predictions
- Faster cycle from design to manufacturing
- Air load information available from integrated pressures

### The Technology

Pressure sensitive paint is a noncontact pressure measurement technique that creates a continuous pressure map of a test object's surface. The readings are obtained by spraying a photoluminescent paint on the test object. The surface is illuminated with a selective color band of light, typically blue in color. The paint emits light of a different color, and the intensity or brightness of this emitted light is an indication of the pressure on the surface. The lower pressure regions will be brighter while higher pressure regions will appear dimmer because the oxygen present in air quenches the light. The luminescent/oxygen quenching process is self-refreshing, eliminating the need for cleaning or repainting between test conditions.

The emitted light is detected by a precision digital camera, and the obtained images are stored via a personal computer (PC). Two images are required for accurate measurements, a static condition or "wind off" reference image and an image at the desired test condition. These images are ratioed and manipulated on the PC to give the test object's surface pressure mappings for the specific test condition. The pressure images are typically computer colorized to allow different pressures to be indicated by different colors. The reference scale can also be displayed.

### Options for Commercialization

The NASA Glenn Research Center is willing to demonstrate the technology and assist in the formation of a working pressure sensitive paint system. NASA has been working with several universities, other government agencies, and industry to help in the development and implementation of pressure sensitive paint systems in a variety of applications.

### Contact

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### Key Words

Pressure measurements  
Pressure sensitive paint  
Wind tunnel testing

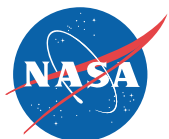
### Reference

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